

¢ARTELS & CUTTTHROAT\$



GAME MANUAL



STRATEGIC SIMULATIONS INC.

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If you are using DOS 3.3, you must use a 13-sector scratch disk when saving data files. This disk must be initialized prior to use.

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INTRODUCTION

Cartels and Cutthroats is not just an exciting game. It is a sophisticated management simulator. In fact, if you are able to master this game you probably have the makings of a corporate manager!

This manual contains both information about how to play this game and a thorough explanation of many of the concepts of economics and business management (see SPECIAL BEGINNER'S REPORT). If you are already fairly familiar with these concepts, read the "Short Rules" card included with this package and get on with a game. Refer to this manual at any time later to confirm your suspicions or clarify certain areas.

PARTS INVENTORY

- A. GAME BOX
- B. GAME MANUAL
- C. 5¼" GAME DISC
- D. SHORT RULES CARD
- C. BUSINESS PLANNING PAD

GAME TYPES

One of the first questions you answer when starting a new game, is what type of game you want to play. There are four types, as follows:

Open Game — In this type of game all of the players sit around the computer and can view each others' reports.

It is convenient to use the game paddles with an open game so players won't have to move to the computer. Instead they can just pass the paddles around. After all players have finished viewing their reports, plans are entered. The recommended way to enter the plans is for one player to read all of them aloud, while another player types them into the computer. This type of game is especially good when there are beginners playing.

Closed Game — In this type of game, players individually use the computer to view their reports and enter their plans in confidence. Place the computer so only one player at a time can see the screen during the viewing and planning phase. However, viewing the News Wire and Annual Report should be done with all players together. Thus, you will have to use a little imagination in setting up the computer and the video monitor (or TV). This type of game is more realistic and challenging since each player has limited knowledge of what the competition is doing.

Hard-Copy Game — This type of game requires a printer that can be turned on with a simple PR#n (where "n" is the slot the printer is in). All reports are output to the printer for distribution to the players. If this type of game is combined with the "save game" feature, then a classroom set-up is possible. For instance, a game can be played at the office if you bring the reports in each morning and pick up the plans each afternoon. (This assumes your computer is at home and that if you're one of the players, you can find someone else to enter the plans. Otherwise you would have an unfair advantage).

Beginner's Game — The beginner's game is an Open Game with several other options already selected for you. This simplifies start-up by reducing the number of questions you have to answer. In addition, the economic environment of the beginner's game stimulates growth. Random chance (luck) is also increased to make skill less essential.

BEGINNERS

Everyone starts a new game as a beginner. For your convenience, Cartels and Cutthroats has several special features for beginners. There is the Beginner's Game, mentioned previously, that provides a simpler start-up procedure.

Besides a beginner's game, Cartels and Cutthroats also includes a feature that permits individual players to be specified as beginners (regardless of the type of game selected). This provides beginners with: more time to view their reports, some sales advantages, a reduced chance of bad luck outcomes, and a market analysis memorandum. This last feature consists of a memo from a "special advisor" who will give hints on how to increase profits. Generally, these advantages granted beginners should be enough to help them stay in the game but shouldn't make them win against experienced players.

COMPUTER PLAYERS

You may create additional companies that will be managed by the computer. These "players" will follow simple strategies that normally won't win games. However, if you have fewer than three human players, the computer player(s) can make the game more interesting.

THE SCENARIO

All of the specific aspects of the game you are going to play are described in the scenario. It gives the type of product you produce, the kind of raw material you use, and the economic outlook for the next five years. Each of these aspects can be individually selected as follows:

Product Type: There are three general product types that represent stereotypes for general classes of products: necessities, luxuries and mixed goods. Only one type may be selected per game.

Necessities are products that consumers need in certain quantities. They will generally pay higher prices if necessary to obtain the units they desire, but they won't buy significantly more units even if the price drops. Thus, total revenues (of all the companies added together) will decline if the average price drops and will increase if the price goes up. However, if an individual company lowers its price relative to the competition, it should sell significantly more product. The reason is that price is the most important consideration to consumers as they choose among competing necessity products. Thus, necessities can lead to extreme cutthroat competition but they also make price-fixing cartels very profitable.

Luxuries are products that consumers buy out of their disposable income. If the economy grows, they will buy considerably more units. They will buy much less if the economy drops. Given any particular economic situation, a drop in the average price will cause total revenues to increase, whereas a rise in price will cause them to decrease. However, for an individual company's sales, price is less important than advertising and other considerations. Luxuries therefore cause less intense price competition and don't normally encourage cartels.

Mixed goods are halfway between luxuries and necessities. Regardless of whether the average price goes up or down, the total revenues will remain about the same. (This is called "unit elasticity" in fancy economic terms). All other aspects of competition for mixed goods are also halfway between luxuries and necessities.

Raw Material Type: There are four types of raw material that vary in terms of price fluctuations and availability. There are: those for which prices are stable based on abundant supplies; those for which prices fluctuate unpredictably based on world-wide supplies; those for which prices fluctuate seasonally, with the third quarter offering the lowest prices; and those for which prices are directly influenced by your industry's total demand on your few suppliers. In all but the last type, the price is predicted for the current planning period. For the "prices influenced by demand" type of raw material the current price is calculated as soon as all orders are in. In that case you only know the price after you purchase. Disrupted supplies can also occur with all but the first type of raw material (abundant supply type).

Inflation: There are four levels of inflation that describe the annual rate of change in the Consumer Price Index (CPI). These levels range from 1% to 15% as follows: very low (1%), controlled (5%), high (10%), runaway (15%).

Base Economic Change: This item reflects the overall annual growth of the economy (excluding inflation). This rate of growth can take the following levels: slow

decline (-5%), stagnant (0%), slow growth (5%), strong expansion (10%).

Note: The annual percentages given for inflation and the economy are estimates, since the actual values can vary anywhere within their total ranges.

Economic Swings: In addition to the basic level of change, there is also the possibility of further changes in the economic rate of growth. These changes can take the form of an up-swing, down-swing or no swing. In addition, swings have a variable probability of happening and variable maximum effects on the economy. Finally, each swing is followed by a recovery in which the economy attempts to return to its original rate of growth. But there are no guarantees concerning whether a swing will happen, how long it will last, or how closely the economy will return to its original rate of change.

Impact of Chance: This item indicates the game's level of variability. Generally, the greater the impact of chance, the lower is the realism. The impact of chance can take the following levels: slight, moderate, significant and wild. The last level creates an exciting and playable game that does not put much emphasis on skill. (It is therefore the level chosen for the beginner's game).

Note: There are certain combinations of the economic options that can create absurd and unrealistic environments. In general, do not specify scenarios with all items set to their extreme values.

SAVING GAMES

Each turn allows you an opportunity to save the current game in progress. You will be prompted to insert an appropriately initialized disk and give the game a title. At any time later you may resume a saved game by answering "no" to the question "Do you want to start a new game?". You will then be asked to insert the disk with the saved game and to enter its name. In all cases saved games will resume at the point where plans are entered. Thus, players must fill out their planning sheets before the game is saved and must retain those plans until the game is resumed.

ANNUAL AND FINAL REPORTS

Each year, after the fourth quarter performance has been reviewed, an annual report is presented. This report shows the current ranking of all players by equity growth, by percent income per dollar sales, and by total units sold. A second page of the report gives the percents that each cost and income item represents of total revenues. This page can be very useful in discovering how different strategies compare.

An identical report is prepared at the end of the game. Although the winner is the player who ranks highest in equity growth, other players may take consolation from their rankings in the other categories.

MISCELLANEOUS

For the sake of realism, all dollar figures given in the game (except costs per unit) may be thought of as having three zeros omitted. In other words, where the game shows \$10,000, it could be thought of as \$10,000,000. (Also, the number of units sold would be 20,000 instead of the 20 units

the game displays). However, once you accept the realism of the game, it is probably less confusing to deal with the values displayed by the game exactly as they are given.

The title of this game, *Cartels and Cutthroats*, was not arrived at by random selection. Cutthroat competition and price-fixing cartels are the two extreme strategies used in industries where there are a limited number of companies (oligopolies). Thus, even though most forms of competition fall somewhere between these extremes, the title of this game can be a constant reminder of the extreme options available to your industry.

One of the questions you will be asked to answer in the

set-up of a game is "How many quarters do you want to play?". The minimum length of a game should be eight quarters. This is just long enough to try out some of your strategies. The recommended game length is five years or 20 quarters. The model was designed with a game of this length in mind. The maximum game length recommended is 10 years or 40 quarters. Strange things may happen to games running longer than ten years (such as a total deterioration of the economic scenario). There is another way to determine how long a game will run: Specify the length as longer than you anticipate playing, and simply stop the game (by typing "Q") at a certain predetermined time (like midnight).

SPECIAL INTRODUCTION TO BUSINESS

FIRST DAY ON THE JOB

New President
First Day

Good morning. And congratulations on your first day at work — running the company your father bought you for your birthday. He wants you to learn about business first hand. As his executive secretary, my assignment is to prepare a "crash" course report for your first day on the job.

I have attached an outline on business and the operations of this company. Knowing that you majored in art and sociology, and never learned to balance your checkbook, I have kept this report very simple. If, however, you feel confident to begin making decisions, you can skip my report.

Remember that, although your father wants you to learn about business, he doesn't believe in losing money. If he sees your company in danger of going bankrupt, he will step in and place you back on your old allowance.

Sincerely,

Meg A. Bucks
Ms. Meg A. Bucks
Executive secretary

THE ECONOMIC WORLD YOU LIVE IN

Although you have successfully hidden from it so far, you should know that there is an "economic" world that makes capitalism work (and has paid your allowance all these years). Economics can sound like alphabet soup, but these initials are important: GNP, CPI, and PPI. Together with the Prime, they are as important to good planning as your Racing Form is to betting on the horses.

GNP

This is not a gasoline additive; it stands for the Gross National Product. (Gross indicates "total" and is not a judgement of product quality). The GNP is a measure, in dollars, of the total market value of all goods and services produced by the economy during the last period. Market value is simply the price tag that final consumers pay. In order to avoid double-counting, GNP counts only final goods. But because the GNP is based on current prices, its value will be inflated by the current inflation rate. The important aspect of GNP is its change each period. Your company reports will keep you posted on the GNP and its changes.

If the GNP is going up, more people are producing, as well as receiving paychecks and profits. With this increase in income, people will buy more — more money for horse racing, disco dancing, and (of interest to you as president) more of your product. As you may suspect, the GNP is not always cooperative. It's been known to decline. You have heard of recessions and depressions? These represent GNP declines. Don't overproduce or build factories in a declining GNP.

CPI

The CPI is the consumer price index, which provides a measure of inflation. You are certainly aware that it takes more dollars to buy the same amount of consumer items each period. This "general" rise in prices is what is

measured by the CPI. The CPI parallels increases in your costs for items like raw materials and labor. Your costs generally rise with the CPI, but so does the willingness of consumers to pay higher prices for your product. The CPI then, just "ups the ante" for everyone. Don't become excited if profits go up during inflation. You have to grow faster than inflation to be truly profitable.

PPI

The PPI (Purchase Power Index) indicates the growth of the economy excluding inflation — in other words the "real" gain in consumer buying power. The government publishes the GNP and CPI, the marketing department uses this information to calculate the PPI. Since the PPI removes the CPI (inflation) from the GNP (economic growth), it is very useful. In addition, the PPI is calculated with a starting base of 100 when you begin. For these reasons, the PPI (and its change from quarter to quarter) is the most useful of the "indicators" for planning production and expansion. You must deal with "aggregate" (overall) indicators because your final consumers are dispersed, and are influenced by the general trends of the economy.

Prime

"Prime" is short for the "prime interest rate". The Prime is the rate bankers charge for loans to their "best" customers — seldom us. More importantly, the prime indicates the availability and cost of funds for expansion. The company's interest rate will be the prime plus a premium. That premium varies, depending on the bank's assessment of the company's operations. The catch 22: if your profitability declines, the bank increases the interest charge, profitability declines further, and so on.

This concludes the general overview of the economic environment. I will provide more details on the environment as we review your company's reports. Overall though, economic trends provide you with "general" readings. You will make "fine-tuning" adjustments after reviewing the company reports.

THE BUSINESS YOU ARE IN

You are in the business of taking in raw materials and manufacturing finished goods for sale. Viewed as a process, the company transforms inputs into outputs of greater value (the price exceeds the cost per unit), as illustrated in figure 1.

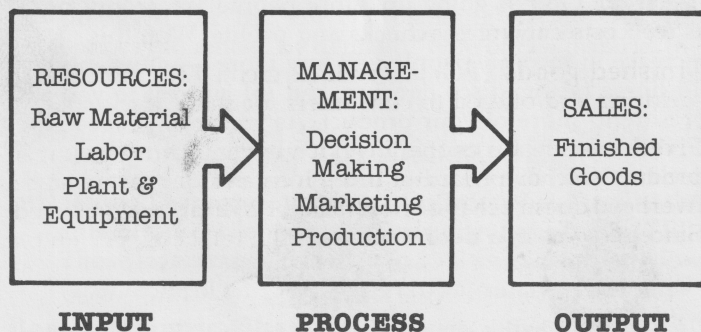


FIGURE 1. Simplified view – Production Company

There are three product types that the company could produce: luxury, mixed, or necessity goods. Once the product type is selected, it cannot be changed, and all of your competitors will be producing the same type of product. Thus, you will be competing "head-to-head" for a share of the available market.

CONGRATULATIONS!

You have acquired a manufacturing company that makes a product considered a luxury by most consumers.

Your raw material prices fluctuate unpredictably according to world-wide supplies.

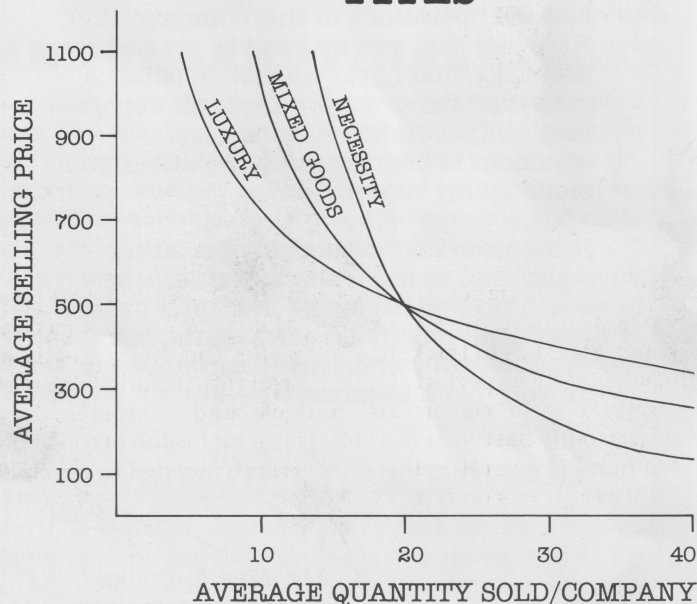
The economic outlook for the next five years is for slow growth in the Gross National Product (GNP) with an additional economic up-turn likely some time in the future.

Inflation, as measured by the Consumer Price Index (CPI), is expected to continue at a controlled level.

In addition, the impact of chance on the company and the economy should be significant.

The product type, therefore, has important consequences for strategy. For example, advertising is more effective for a luxury product, whereas price is the key element for a necessity good. The sale of luxuries is hurt the most by a GNP decline, but luxuries have the greatest growth during PPI expansion. The opposite is true for necessities. Thus, your strategy for competing for sales and profits must be based on the type of product you have to sell.

ESTIMATED DEMAND CURVES FOR GENERAL PRODUCT TYPES



REVIEWING YOUR COMPANY'S PERFORMANCE

Your role is to make decisions. These are recorded on a company Planning Sheet. Before making decisions, you should review the company's quarterly reports. I have reproduced last quarter's reports along with a brief discussion of their use.

Summary News Wire

The first report you receive is the Summary News Wire. This is not a report in the normal sense, but it provides you with your first hint about operations in the previous quarter. The Summary News Wire lists the actual GNP, CPI, and PPI statistics for last quarter. It also lists the number of units sold, the price, and the total revenue of each company in the industry. Finally, the price of raw material units is listed.

The Summary News Wire is a special report because it is supplied to all the companies in the industry. The information given here is also available in your own company reports. Special notes are occasionally attached to the bottom of the Summary News Wire (usually on government actions that affect the industry).

Profit And Loss Statement

WHEELER DEALERS INC

PROFIT & LOSS STATEMENT FOR 1/2

	\$	%tl	\$/#	%ch
Revenue	12,625	100	505	0
COG Sold	4,800	38	192	11↓
Overhead	1,630	13	65	10↓
Adver & Mrkt	600	5	24	20↑
Resr & Devlp	500	4	20	0
Depreciation	400	3	16	0
Misc Expense	0	0	0	0
Oper Expens	3,130	25	125	2↓
Interest	358	3	14	12↓
Taxes	2,067	16	82	21↑
Total Costs	10,359	82	414	3↓
Net Income	2,266	18	91	20↑

The Profit and Loss Statement is the first company report you will receive. A profit and loss statement is a flow measurement of wealth over a "period of time". The four columns of the Profit and Loss Statement provide:

- 1) The total dollar amount of activity for each line item.
- 2) A percentage breakdown for each line item. Sales revenue is 100% and each item below is shown as a percent of revenue.
- 3) Average cost per unit (total dollars divided by the number of items sold).
- 4) The percent change of each line item from the

previous period. (If the previous amount is zero, a double arrow is shown since the percent change would be infinite.)

This format provides valuable planning information; for example: If total costs are averaging \$400 a unit when 20 units are sold, lowering the selling price below this would not keep you in business very long.

The profit and loss statement provides "the bottom line" so frequently referred to. The first line of the Profit and Loss Statement is sales revenue, the last line is net income (or loss). All the lines in between are expenses or costs of doing business. Most of these costs don't need an explanation. The expense amounts relate directly to your decisions on the Planning Sheet. However, one item deserves special discussion — the Cost of Goods (COG) Sold. COG Sold is calculated from Cost of Goods Produced (not shown), and I begin my discussion there.

The Cost of Goods (COG) Produced consists of raw material, labor, and any storage costs. Storage costs result if you hold raw material units in inventory from period to period. Calculating raw material costs used in production is a simple addition and subtraction procedure: Add raw material purchases to the starting inventory, and then subtract out the ending raw material inventory. The remaining amount plus any storage cost is the value of raw material used in production. Direct labor is now added to raw material value. Direct labor costs are based on wage rates, production scheduling, and percent automation (see PRODUCTION). Raw material value and labor costs used in production are known as prime costs. Prime costs make up COG Produced. Profitability increases as prime costs are kept down.

Next, COG Sold is calculated from COG Produced. They differ when you produce more than you sell. Unsold finished goods are listed in inventory and are not "expensed" until they are sold. The storage charge is added to finished goods value. A similar addition and subtraction process is used for COG Sold. Add the COG Produced to the start value of finished goods, then subtract the end value (from the balance sheet) of finished goods inventory. The result is COG Sold shown on the Profit and Loss Statement. You may now realize that the one line, COG Sold, represents numerous policies (for example, both raw material and finished goods inventory policies). The unit cost of COG Sold should be well below the selling price to allow for overhead, other expenses, and of course profit.

Balance Sheet

WHEELER DEALERS INC

BALANCE SHEET FOR 1/2

Cash	6,549	Loans	7,000
Invent.	450	Liabil.	7,000
Bldgs.	31,200		
Aut. Eqp.	0	Equity	31,154
Assets	38,154	Lia & Equ	38,154

The balance sheet is a very important company report. It provides information on the composition of the

firm's assets (on the left), as well as the composition of the claims on those assets, liabilities and equity (on the right). The balance sheet represents assets and claims at a particular point in time, like taking a photograph. The amounts invested in each asset category (cash, inventory, factories, etc.) are the results of past decisions. Your decisions will further alter the asset values and their mix. For example: building another factory, stocking up on raw material, or paying on a loan would all change various asset values.

The balance sheet items provide the "limits" for planning next period's production. The company's cash, inventory value, and automation and building value are shown. Production or expansion cannot take place beyond the "ability" represented by the balance sheet accounts.

The right side of the balance sheet represents the claims on your assets (from the bank and your family). The loans, or liabilities, are the bank's claims on your assets. The ratio of liabilities to total assets is important.

As this ratio increases, the risk of bankruptcy also increases, particularly during a declining sales period. The other "claim" on the right side, equity, is your "net worth" in the firm. As you know, your father expects this account to increase since it represents part (even if small) of the family's wealth. Finally, as you noticed (I hope), combining liabilities and equity "balances" with total assets.

Two small reports are included with the Balance Sheet report because they highlight balance sheet relationships.

The first one is called Ratio Analysis. Three percentages are calculated: income divided by assets, income divided by equity, and loans divided by assets. The first two are useful in analyzing the rate at which the company is creating income. Any difference between these two will be due to the "leverage" created by using the bank's money (in addition to your own) to make your income greater. The third ratio gives some additional insight into the firm's leverage since it is based on loans divided by total assets. As this percentage goes higher, so does the earnings/equity. But if your loans become too large a portion of your assets then you run a risk of bankruptcy. As you gain experience, these ratios can be increasingly useful in analyzing your company's financial situation.

The other area on the Balance Sheet report is called Equity Analysis. This summarizes the relationship between the Profit and Loss and the Balance Sheet Statements. The bottom line net income from the Profit and Loss Statement will increase the equity of the Balance Sheet by the same amount (or decrease it with a loss). Visualize the equity measurement as gallons of water in a bathtub (figure 2). Sales revenue flows into the tub throughout the period from the faucet (hopefully turned up high). All costs (expenses) of doing business will be represented by a series of drains (hopefully small) that take water from the tub. Because your business is an ongoing enterprise, this process is continuous. However, since you desire periodic measures of the results of the in and out flow of water, you photograph the level (construct a balance sheet) each quarter. The change in water level is precisely the amount of net income (the excess of the faucet water over that escaping down the drain). Why not shut off the faucet, stop the drains and relax in a bath?

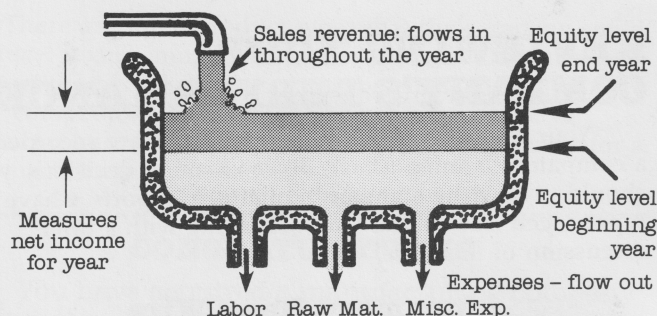


FIGURE 2. Simplified relationship - income statement to balance sheet using bathtub.

The water in the tub (your equity) would still decline through evaporation (depreciation of your fixed assets).

I hope you stayed with me through this extended analogy. I have tried to illustrate an essential relationship between the Balance Sheet and the Profit and Loss Statement. Any other description is just so much bubble-bath, designed to obscure the level of water in the tub.

Although Equity Analysis is a simple calculation, it is an important reminder that the decisions you make are all condensed into one figure that increases (or decreases) net worth. Your goal is to increase equity to the limit of your ability!

Sales Report

SALES REPORT SALES ACTIVITY 1/3

	units	%ch
Available for Sale	25	0
Total Demand	33	32↑
Units Sold	25	0
Unsatisfied Demand	8	

CONSUMER PREFERENCE ESTIMATES

	market rank	% sales caused
Price	3	35
Advertising	1	35
Product	6	0
History	2	12
Other	1	18

PERFORMANCE CHART

income	revenue
0/3	
0/4	
1/1	
1/2	
0	12,625

The Sales Report provides information on the effectiveness of your sales efforts. It is divided into three sections: sales activity, consumer preference estimates, and a performance chart.

Sales Activity: Sales activity shows how well you balanced product available (supply) with product desired (demand). When you supply more than consumers desire, the surplus is listed as excess units. If the number of excess units increases, adjustments on your next plan should be made (lower your price, cut back on production, increase your advertising or improve your product). Small excess unit amounts can be ignored. The opposite of excess units is excess demand. Excess demand occurs when total demand is greater than product available for sale (supply). Turning customers away because of excess demand creates ill will towards the company (negative advertising). Your next plan should try to bring supply and demand back into balance.

Consumer Preference Estimates: Consumer preference estimates provide a useful insight into the causes of the company's sales. Five variables that cause sales are shown, with an estimate of the percent sales caused by each. Also, each variable is ranked in the industry for its favorable effect on sales. (For example: the lowest price is ranked first, while the highest advertising is also ranked first).

Performance Chart: The performance chart is a graphic comparison of revenue and income for the last four periods. Trends can quickly be identified with this chart.

Production Report

PRODUCTION REPORT RECENT PRODUCTION COSTS

	\$	#	\$/#	%ch
RM Storage	0	0		0
RM Purchased	1,080	40	27	46↓
FG Storage	0	0		0
Direct Labor	4,125	25	165	0
Prod Overhead	620	25	25	22↓

CURRENT INVENTORY

	units	warehs	%full
Raw Material (RM)	15	2	75
Finished Good (FG)	0	0	

RECENT LABOR

Rate Paid	8.25	Factories	2
# Employees	1000	% Automated	0
		Nrml Capacity	20

CURRENT PLANT

Report provides insight into business efficiency (low cost production). There are four sections of the Production Report.

Recent Production Costs: Four columns provide detailed information for tracking production costs: total dollars, total units, cost per unit, and percent change from the previous period. The last column, percent change, allows you to quickly see the effects of any strategy on production costs.

Current Inventory: Information on both raw material and finished goods is shown in the current inventory section of the Production Report. In planning production, you must know the current raw material inventory. A rising finished goods inventory may indicate corrective action is needed (lowering price, increasing advertising, cutting back production, etc.). The "percent full" of inventory warehouses should be checked for storage efficiency.

Recent Labor: The Recent Labor Report tracks components of your labor costs: labor rate, number of employees, and number of hired (or rehired) employees. Sales effectiveness may require production above normal capacity, but the effect on wage rates should be noticed. Laying off and rehiring employees adds to costs. Steady production at normal capacity is the most efficient (least cost per unit).

Current Plant: Current plant contains normal capacity and percent automated information about the company's factories.

Market Summary Report

MARKET SUMMARY

	#sold	price	revenue	%mrkt
WHEELERS	25	505	12,625	19
DEAL LTD	20	500	10,000	15
BETTER	22	497	10,934	17
GONNAGET	21	520	10,920	17
BIG DEAL	20	524	10,480	16
JJ & CO	20	510	10,200	16

.. estimated ..

	0/4	1/1	1/2	1/3	%ch
GNP	2620	2691	2763	2824	2.2↑
CPI	236	240	244	247	1.2↑
PPI	100	101	102	103	1↑
Prime	16.5	16.1	15.9	15.7	1.3↓
Ttl Sold	120	132	128	131	2.3↑
Av Price	500	508	509	515	1.2↑

New Factory Cost	16,320
Next RM Cost/unit	80

While the Sales Report summarizes company effectiveness (revenue and income), the Production

The last report in your file is the Market Summary report. Don't throw it away, it's not that complicated. The top of the Market Summary Report displays the units sold, price, revenue, and market share of each company in your

industry. This is where you size up the competition. Be sure to check where your price ranked among your competitors. The next section of the Market Summary report provides a repeat "glimpse" of economic conditions and the previous performance of your industry, as well as projections for the remainder of the present quarter. The GNP, CPI, PPI, Prime, Total # Sold, and Average Price are given as separate lines. For each of these lines, a number of columns display their changes over time. Starting at the left, the first column past the names gives the values as of the end of the period three (3) quarters earlier. The next column similarly shows the data for two (2) quarters previous, followed by the column for the last period. The next two columns are estimates for what "should" happen during the period for which plans are being made. The last column is the percent change between the values for the previous period and the projections for this planning period. Finally, the Market Summary Report lists the cost of constructing a new factory during this period, and the price of raw materials per unit. (If you build a new factory it will not be ready for producing until the following period, since one period is required for construction.)

Memorandum And Letters

MEMORANDUM

TO: DANIEL P. BUNTEN, PRESIDENT
FROM: Finance Director
DATE: 1/3
SUBJ: Requested Change in Loans

As per your instructions I repaid \$2000 of our loans.

I have also been informed that the interest rate on our outstanding loans will be decreased from the present rate of 16.1%. This change was mainly caused by our assets/liability ratio.

The annual rate on loans totalling \$7000 will be 15.9%. Our quarterly interest payment will now be \$278.

Our guaranteed line of credit for this quarter is \$27300. Together with our current cash, we have access to total funds of \$33849.

MEMORANDUM

TO: DANIEL P. BUNTEN, PRESIDENT
FROM: Director of R&D
DATE: 1/3
SUBJ: Research Breakthrough

We have discovered a method of using automated equipment that will reduce our labor cost by 10% for an investment of \$1590. At our present production rate and costs this investment will be recovered after only .9 quarters. Send a memo to 'A' to approve this automation proposal.

We have also developed an improved product design that the marketing department believes will increase our sales by 15%. The total costs for

changing over our facilities to produce this improved product will be \$1100. send 'P' a memo to approve this change.

At various times your company's department heads will send memorandums (memos) to you. These either ask for direction (see SPECIAL MEMOS) or provide information. There is one memo that is so important to your corporate survival that you must consult it before making any plans. Your Finance Director informs you each period of the total funds that are available for the planning period. If the amount you spend, minus revenue, exceeds that figure, you are bankrupt! Although the consequence of overdrawing your credit is extreme, you don't usually have to be too concerned with each cash outlay for labor, interest, warehouse rental, etc. Just don't buy too much raw material or too many factories and you should remain solvent.

There are also rare letters that come from people outside the company offering you options. Your response to these and any other alternative is made through the Special Memos section of the Planning Sheet.

GOING TO WORK: MAKING YOUR PLANS

Now that you have reviewed the performance of the company and analyzed the economic climate, it's time to go to work. For the company president (that's you!), work consists of making decisions on next quarter's operations. A Planning Sheet is provided for you to record your decisions on eight aspects of company operations. These plans will be implemented for you (that's the advantage of being president). Your company's performance is based on these plans. If the decisions are poor, you have only yourself to blame (the disadvantage of being president)! Adopt a general strategy to guide your plans (price leader or follower; high mark-up, low volume; low mark-up, high volume; product improvement and efficiency; advertising leader; etc.). If you have poor results, adjust your strategy. Many different types of strategies could be profitable, however your strategy must acknowledge the economic environment and the strategies of the competition, to remain successful. For example, a strong expansionary strategy (building factories, large inventories, and high volume sales) will fail during an economic downswing. Sales will fall and fixed costs per unit will increase. So pay attention to the economic forecast. The company's planning sheet requires the following eight decisions from you:

RM Purchase

Enter the number of raw material units you want purchased this period. The choice ranges from 0 to well over 100. Raw materials are converted into finished goods by your factories each period on a one-for-one basis. A factory can produce a maximum of 20 finished goods per quarter (you have two factories to start with). However, the "normal capacity" of each factory is 10 units. Producing over 10 requires wages to be paid at time-and-a-half, (see PRODUCTION).

The number of units you purchase should depend on the cost of raw materials, production plans, current

inventory of raw materials and financial resources.

If the price of raw material is "relatively" low it may be advisable to stock up for two or more production periods. This is especially true in an inflationary environment with raw material prices fluctuating. During the first quarter for which you will plan, raw materials will be \$50 per unit (a relatively "normal" price). Buying to match your production plans is always safe at this price.

Raw materials must be available to meet your production plans. There is no wastage in producing finished goods. If there are no raw material units in inventory, you must purchase at least the units necessary for your planned production.

Buying more units than you plan to produce in the same quarter will place the excess into raw material inventory. These units will then be available for a later period and allow you to reduce the impact of a raw material shortage. There is a storage cost for these units. A warehouse rents for \$40 per period (initially) and each unit in the warehouse costs \$1 in storage fees per period. Each warehouse can hold up to 10 raw material units. (Similar costs and restrictions apply to warehouses containing finished goods. Check the table provided on the back of this manual.) Storing a small number of raw material units in a warehouse is uneconomical. You can check your efficiency in storing both raw material and finished goods by looking at "warehouses rented" and "% full" items on the Production Report.

Finally, as mentioned, your raw material purchases are limited by your financial resources (cash and pre-approved loans). Don't overextend your resources (unnecessarily increasing bankruptcy risks) to carry an excessive raw material inventory.

In the past, raw material embargos and shipping strikes occurred infrequently; but as everyone knows, times have changed. Occasional "stock ups" when the price is low will reduce the impact of such supply disruptions.

Production

The number of units the company is to produce is the next item on the planning sheet. As mentioned, each factory can produce up to 20 units of finished goods every quarter. Up to 10 units (normal capacity) are produced at a standard wage rate determined by your labor contract. Produce over ten, and you pay "time-and-a-half" (50% more than standard) for each unit in excess of ten. In addition, each change in the number of units produced causes a change in the number of workers needed (since we add a shift for any production above the normal level). Each worker recruited and hired adds \$1 to your overhead for that period. Each worker "laid off" costs \$0.50 in severance pay. You can eliminate these costs by scheduling production at a constant level. Producing less than ten units in a factory is inefficient (expensive per unit). Fixed costs are spread into less units, which increases cost per unit. This cuts the profit margin unless your price is raised (which may not be competitive).

Temporary production plans for above-normal capacity are sometimes justified. Such decisions are sound if the units can be sold at a price above the new cost per unit. This is called "marginal analysis". It is economical to produce another unit if the additional revenue exceeds the additional cost. However, consistent production above

normal capacity increases the probability of a labor strike or an equipment breakdown. Building another factory (if money is available) would be better than continually over-producing.

The company's factories are not currently automated. Investment in R&D (research and development) provides the opportunity for a breakthrough that allows you to invest in labor-saving automated equipment (see RESEARCH & DEVELOPMENT and SPECIAL MEMOS).

FG Price

The selling price for finished goods is the third item on the planning sheet. All eight planning sheet decisions are important, but none more so than setting your product's price. Too high, and your production won't sell; too low and your revenues (and profits) drop.

When the selling price is too high to clear finished goods, the cost per unit rises, reducing the profit margin (the mark-up of price over cost). Cost per unit is of two types: variable and fixed. Each unit produced contains variable costs: labor and raw material. The total of these costs "vary" directly with the total number of units produced: twenty units use twice the raw materials of ten. The other component of total costs does not vary with the number produced but is "fixed" for the quarter. These costs (also called period costs) will be the same regardless of the number of units produced and sold. For example, depreciation, advertising and administration do not vary with production. If only one unit is produced and sold, fixed costs are divided by one to arrive at the cost per unit. By selling more units, the fixed cost per unit decreases, thus reducing total cost per unit. You should aim to select a pricing strategy that consistently clears finished goods.

A price below the "market price" may create excess demand (more buyers than product available). Customers are turned away when finished goods are not available, creating ill will toward the company; and reducing total revenue (a higher price could have been charged and still cleared finished goods). This ill will must be overcome through advertising and a product history of available finished goods to all customers.

The Market Summary report predicts the price that should clear the industry's finished goods. Your price may vary from this market price depending on your advertising budget, product improvements and other reasons. But don't vary far without justification.

Advertising And Marketing

The fourth item on your planning sheet is the advertising budget for the upcoming quarter. In general, advertising allows you to sell your product at a higher price, and tends to expand the potential market over time. Advertising's effect will vary depending on various factors (for example: the product type, and the competition's level of advertising).

The product type is important in deciding on your advertising budget. As has been previously mentioned, the three product types are: luxury, mixed, and necessity goods. These three types provide useful characterizations, although the distinctions are not precise. Advertising is most effective with luxury, moderately effective with mixed, and least effective with necessity goods. Thus, luxury goods justify the highest advertising budget.

Average ranges (shown as a percent of sales revenue) for different goods are: luxury 5–10% mixed 3–6%, necessity 1–3%. Each quarter, the Sales Report estimates the percent of sales caused by advertising.

The benefit to sales from advertising can be lost by poor decisions in other areas. Advertising is wasted if the product is unavailable because of stock outs. Also a poor pricing record (erratic jumps) can offset advertising gains. In short, advertising increases good performance but can't "buy off" the damage of poor decisions. Experiment with advertising, and watch what the competition is doing. Remember, though, there is an economic limit to advertising's benefits. If advertising cost per unit exceeds the increase in price it supports, reduce your advertising. Don't worry about precision, your rough guestimate should do and will improve with time.

Research And Development

The fifth planning decision is the company's R&D budget. This budget is optional. R&D expenditures are made to gain breakthroughs of two main types: productivity improvements that lower production cost, or product enhancements that improve sales.

Cost-lowering breakthroughs come mainly in the form of automation opportunities. Automation of your factories reduces labor costs. When a breakthrough occurs, a memorandum is sent with your quarterly reports. The memo outlines the cost, payback, and benefit of the automation breakthrough. If you decide to invest in automation, you send instructions by Special Memo.

Product enhancement discoveries are also possible through R&D investments. Product enhancement allows you to "differentiate" your product from the competition. Customers are attracted when you improve your product, increasing your market share.

There are two other productivity breakthroughs that are rarer. Neither require further investments. One lowers production overhead and the other increases maximum production output per period.

Investing in R&D will not insure breakthroughs, although the probability increases as the investments are maintained quarter to quarter. Investments in R&D in the past averaged about 5% of sales. It is far better to invest a small amount in R&D consistently than a large sum occasionally. Whenever you reduce your R&D expenditure your chance of a breakthrough is significantly reduced.

Loans

Loans are the sixth decision on your planning sheet. If you wish a loan, enter the amount desired in this category. You can borrow up to the pre-approved limit (based on a percent of your assets) that is listed in a memo from your Finance Director. Except for emergencies, it is better to use loans for funding factories only, not for operations (raw materials, wages, overhead, etc.). Large loans increase the risk of bankruptcy, especially if sales decline. Bankruptcy occurs when you spend beyond your line of credit plus cash and income.

Emergency loans will be handled for you by the Finance Director (if you have pre-approved funds remaining). You will be advised by memo of any emergency loans.

The interest rate is your cost for using borrowed

money. The bank will make a judgement on your company (based on existing loans, cash flow, etc.) and adjust your interest rate from prime. Poor performance increases the risk of bankruptcy, and thus increases the premium you pay over prime.

Loans may be repaid by entering a negative amount on the planning sheet. If a partial repayment is made, the balance will be refinanced with the new rate representing current prime plus the bank's (reassessed) premium. Refinancing occurs regularly, since the bank evaluates quarterly all loans outstanding.

Factories

The seventh decision on your planning sheet concerns factories. If you order a new factory, it is available for production the next quarter after the current planning period (construction takes one quarter).

When the economy is growing, new factories may increase revenue and net income. As production increases, fixed costs are "shared" by more units, reducing cost per unit, raising the profit margin. However, in an economic downswing or sales slump, an extra factory's overhead (fixed expenses and interest) will reduce profits and, in the extreme, risk bankruptcy. If you can consistently produce and sell above normal capacity, building a factory is justified. However, if a downswing causes cash flow problems, don't hesitate to sell off an extra factory (by entering a negative number on the planning sheet). You will receive book value when selling a factory (cost less accumulated depreciation).

Special Memos

The last decision on your planning sheet is whether to send special memos to company departments. These memos are always in response to memos or letters you receive asking for direction or authorization. By entering the appropriate response you will authorize the special activity or investment. Leaving this section blank always indicates "no action". For example, placing an "A" in special memos will authorize investment in automation (if you have received a request to authorize the expenditure).

You have now concluded your plan. Your directives will be implemented. There is room on the planning sheet to note the results of your decisions in terms of sales and income. Other blanks allow you to track items of personal interest (for example: cost per unit, PPI forecast, raw material cost, etc.). Noting results and items of interest will make the next quarter's plan easier to complete.

The planning description may sound complicated. However, it gets easier each quarter. Don't be overly cautious. Use your own judgement. Remember — the market rewards the entrepreneur! A summary review and a few hints will complete this report.

SUMMARY REMARKS

In review: Your role as company president is to make decisions. These decisions are made on eight aspects of company operations. Each quarter, results are reviewed, and the same eight decisions are remade.

The only evaluator of your decisions is the marketplace. It rewards good decisions with profits. Poor decisions will result in losses or bankruptcy. The marketplace is objective — it doesn't look at intent, but

results. Decisions are judged good or bad, based on their results.

The company owns factories, hires labor, and processes raw material into finished goods. Finished goods are sold in competition with other companies' products. All companies have similar constraints and opportunities. Each makes the same basic decisions. A balance between reducing costs and increasing sales is made. Consistent production at "normal" capacity insures low cost. However, expanding production may be more profitable even though costs per unit rise. Again, the marketplace decides if the balance you choose is correct. Your responsibility: Watch the signals closely. Evaluate your results compared to your competitors' and the economy. If you have built factories, and can't sell normal production, sell a factory. If other companies are selling more product at higher prices, increase your advertising.

Decisions are what you are paid for. Not acting on environmental signals is also a decision. (For example, if the economic environment indicates that you should build a factory and you don't, it is a poor decision).

The economic environment creates the context for your company's operations. Translate environmental changes into strategy quickly. Stock up on raw materials when the price is low. Build factories when the PPI is rising. If it is falling, consider selling a factory and paying back loans to reduce expenses. The market rewards the company that acts quickly on environmental changes. One caution: avoid excessive jumps in strategy. Raising and lowering price or production erratically will usually not be successful. The consumer wants a measure of consistency. Hiring and firing costs can also become prohibitive. But when a change is necessary, make it.

A few specific strategic hints will conclude this report, and then it's time to go to work.

Lower the cost per unit: Fixed cost per unit is reduced by producing more units. Production at less than normal

capacity is uneconomic. It is better to sell a factory than to produce below normal capacity during a sales slump.

Raise your profit margin: The difference between price and cost per unit is the profit margin. Cost-per-unit information is available in the Profit and Loss Statement. Mark your price up from the cost per unit as much as possible and still clear normal production. Advertising allows a higher price mark-up. The advertising cost per unit, though, should not exceed the price mark-up it allows. The economic level of advertising cannot be measured precisely; make your best judgement and watch the results.

Raise total revenue: Total revenue is price times quantity. As price is raised, less product may be sold, so for every price there is a different total revenue. The best price is the one that maximizes total revenue. Again, you can't measure it exactly; make an estimate based on your judgement.

Try anything that works: All of my hints and advice can be discarded, if that is what works. What works is what increases the bottom line: net profit.

There is more information available in your reports than you can use effectively. Time dictates that you make selective use of the information available. Don't dwell over data that doesn't mean anything to you, but look at what does.

This report should get you started. Decisions are easier to make each quarter as you track your results. Basically, decide how many units you want to sell at what price. Your other decisions support this (buying enough raw materials, producing the right amount, financing the purchases, providing support through advertising, etc.).

DESIGNERS' NOTES

This game was a joint effort of a systems simulation expert and a Master of Business Administration. The fact that these two individuals were brothers was an additional plus. The game was tough to design but great fun to test. Hopefully our excitement and satisfaction with this product will spill over to add to your enjoyment.

We would also like to acknowledge the help and support received from the Apple Addicts Computer Club, Little Rock, Arkansas. Special thanks to Phillip Wade, Ron Mason, Chris Johnson and Jim Rushing. And for patience above the call of duty, we are grateful to our wives and our children.

MODEL NOTES

The model for Cartels & Cutthroats is a simulation of the relationships between economic environment, production management, and market forces.

All important relationships that could be modeled without sacrificing playability were incorporated into the game, including the following concepts: price elasticity of demand, Law of Demand, Law of Supply, market price

equilibrium, advertising and product differentiation's effects on sales, inflation, factor costs, GNP, CPI, disposable income, and more.

The simplifications made are to improve playability; for example: dropping the 000's from revenues, expenses and quantities. The bookkeeping tedium associated with most business games has also been eliminated, permitting instead an emphasis on the roles of strategy and decision making. The main emphasis is simply on the fact that business reports are not sacred. They represent past decisions, and are continually changing as strategies and new decisions are implemented. Courses in accounting and business management often overlook this orientation because of their preoccupation with the mechanical detail of constructing reports. Accountants will construct your reports.

All outcomes are generated by predisposed probabilities. A sophisticated use of normally distributed random variables allows outcomes to vary widely while still tending toward certain values. Even chance outcomes can be specified — from very unlikely (realistic) to highly variable (playable).

The game allows freedom to experiment with strategy. However, inappropriately wild play is quickly penalized, as it should be in all adult games. Education occurs with playing, but not at the expense of fun.

ABOUT THE AUTHORS

By affixing my seal hereto, I certify that this product was developed in accord with all currently accepted techniques in the fields of operations research, systems simulation, and engineering design; and I further accept full responsibility for the professional work represented here.



Dan Bunten is a registered professional engineer and systems consultant. His firm, Management Systems Engineering, was founded to bring together the tools of industrial engineering, systems analysis and data processing to solve problems in industry and government. He has extensive professional experience in the areas of systems simulation and mathematical modeling. His collection of well over a hundred bookshelf and war games further attest to his qualifications in the field of adult gaming. The advent of personal computers made possible the fusing of his training in systems simulation with his life-long interest in games, and thus led to the creation of sophisticated games such as this one.

Bill Bunten is the Staff Services Director at the City of Little Rock Parks and Recreation Department. With his MBA, he enjoys the opportunity and challenge of introducing business analytical tools to government decision making. His entrepreneurial interests include being a founding partner in B&E Enterprises, an exporting firm to West Africa, as well as a managing partner of ETC International, an overseas engineering and planning firm.

The Bunten brothers live in Little Rock, Arkansas, and look forward to developing more business environment simulations such as stock market, and sales management games. Your comments regarding future work would be welcomed.

CREDITS

Game Design: Dan and Bill Bunten
Program: Dan Bunten
Manual: Bill Bunten
Art and Graphics: Louis Hsu Saekow
Typesetting: Abracadabra Typesetting
Printing: A&a Printers

SELECTED GLOSSARY

Assets: The economic resources or properties of the firm. Asset accounts are shown on the balance sheet (cash, factories, inventory, etc.). Assets are the firm's resources to be used for generating revenue and income; they represent the company's decision as to what composition of resources is best suited to making a profit. Total assets will always balance with the sum of liabilities and equity.

Automation: The use of automatic equipment to replace human labor. An automated facility normally requires fewer workers and results in less labor cost. However, automatic equipment costs money. Thus, the decision to automate (which entails replacement of labor costs by investments of funds) is usually made on the basis of the "pay-back" period — the length of time the expected labor savings must continue until the amount invested in automation is recovered.

Balance Sheet: A statement of a firm's financial position at a particular point in time. The composition of a firm's assets (resources) are revealed and are balanced with claims on those resources. Claims are either liabilities (loans) or equity (net ownership).

Cartels: An association (formal or informal) of producers of like goods, formed to gain monopoly power in the marketplace. Monopolistic power allows higher prices than would exist under normal competitive conditions. Control is usually gained by price or output agreements. Cartels are in violation of antitrust laws in the United States. But when they take the guise of trade associations, violations are hard to prove.

Cash Flow (Statement): The analysis of the sources, uses, and net change of cash during a period. Sales revenue and miscellaneous income create an in-flow of cash while purchases and the payment of costs create an out-flow of cash. A cash flow statement is not included in this game because it is the Finance Director's job to balance the company checkbook (within limits).

Competition: A state of rivalry among the companies in a given industry in which each tries to gain a larger share of the market and larger profits. Normally, competition insures the customers of value in their purchases, and insures that only companies that produce efficiently will stay in business. Cutthroat competition is an exception, however.

COG Sold: The Cost Of Goods Sold — the prime costs of labor and raw materials used in making products. These costs are deducted from revenue only when products are sold. Until then they make up the value of the finished goods inventory.

CPI: Abbreviation for the Consumer Price Index, a price index produced by the U.S. Department of Labor, Bureau of Labor Statistics to track inflation's effect on the cost of living from period to period. The CPI weights products by their importance to consumers' budgets and compares those prices to the base year of 1967. The actual value of the CPI is the number of dollars that are currently needed to purchase \$100 worth of goods at 1967 prices.

Cutthroat Competition: The use of extreme price cutting by a producer to eliminate competitors and ultimately control the product's price through monopolistic power. Antitrust legislation makes the blatant use of cutthroat competition illegal. However, antitrust suits are generally

limited to the larger industries, and the smaller industries are left alone to solve their own problems. When all companies are roughly the same size, cutthroat competition will usually destroy everyone equally. Informal cartels and price followship are alternatives to cutthroat pricing.

Demand: The desire of consumers to buy a given amount of product at a given price in a given time period. For the purposes of this game, demand is shown (on the Sales Report) as the number of units consumers want to buy of your product. However, in the realm of economic theory, demand is a much broader concept. According to those theories, there is a schedule that relates quantity sold to various price levels. Thus, each quarter, the amount of goods demanded depends on the market price. Although this schedule is never seen, prices are set with its effect in mind. As prices are lowered, more goods can be sold. This observation is known as the law of demand. Its effect varies by a product's type, among other things. Lowering the price of a luxury has a greater effect than lowering the price of a necessity. This difference in response to price changes by different products is known as elasticity. The more elastic a product is, the more consumers react to price cuts or increases.

Depreciation: The general decline in value of an asset resulting from use and age. Depreciation is deducted from revenue each period to allocate part of the cost of the asset to the period in which it was used.

Differentiated Product: A product that, while functionally similar, is different from those of the competitors. A differentiated (or "improved" in the case of this game) product has greater sales potential.

Economics: The area of knowledge dealing with the production, distribution and consumption of goods or services. When choices are made in a business environment, the economic choice is the one that most reduces costs, raises profits, or has some other financial benefit.

Equity: The net ownership of the firm derived by subtracting liabilities from assets. Equity is increased by income and decreased by losses. (Dividends also reduce equity but they aren't used in this game).

Expense: A cost incurred in operating a firm. In an accounting sense, expenses are any type of operating cost that relates to a given accounting period rather than to a product. In this game, for example, overhead, depreciation and interest are treated as quarterly expenses. However, costs incurred in producing goods are shown as inventory value until the period in which they are sold; only then are those costs shown as expenses.

Finished goods (FG): Products created through manufacturing and offered to consumers for sale.

Fixed costs: Costs that do not vary with the amount of product sold or produced in a given period. For instance, overhead doesn't change whether 1 or 20 units are produced. Since fixed cost is a component of the total cost per unit, a lower unit cost can be obtained by spreading fixed costs among more units. In other words, the more units sold, the less fixed cost per unit.

GNP: Abbreviation for Gross National Product. The total assets value of a country's output of goods and services

produced in a period. The numeric value of the GNP is in billions of dollars.

Income: The profits of a firm arrived at by subtracting expenses from revenue. "Net" income is income earned from product sales. "Other" income is a result of special occurrences such as the sale of surplus property.

Inflation: The relative increase in the number of dollars necessary to buy the same amount of goods. From another perspective, inflation is the decrease in purchasing power of a country's currency. The CPI is an indicator of inflation.

Earnings/Interest Ratio: The number of times the interest payment is earned by a company in a given period. This ratio is important to the bank in calculating the interest rate for the firm's loans. (Also see Liability/Assets Ratio.)

Liability: The total amount of the firm's assets owed to outsiders. For simplicity, loans are the only type of liabilities used in this game.

Liability/Assets Ratio: The proportion of the firm's assets that are owned by outsiders. Since loans are the only type of liabilities used in this game, this ratio is the same as the loan/assets ratio. This value is especially important as an indication of your solvency to your creditors (the bank). This ratio, combined with the earnings/interest ratio, determines the additional interest points that your firm will pay above the prime rate.

Luxury: A commodity that satisfies a secondary need of the consumer. In general, the demand for a luxury increases as disposable income (and the economy) rises. Luxuries also have an elastic demand which means that total revenue increases with a drop in the industry's average price and revenue declines with a rise in price.

Market price: The average price of companies in the industry. This price must respond to the economic forces of supply and demand. If demand is ignored and the market price rises, the product will not sell. The price must eventually fall to clear accumulated inventories. The market price can reconcile the conflicting forces of supply and demand by adjusting itself to the point at which supply and demand are in equilibrium.

Necessity: A commodity that satisfies a primary need of consumers. In almost all aspects, necessities are the opposite of luxuries (see Luxury).

Overhead: An expense not chargeable to a particular part of work or product. In this game overhead includes such things as utilities, insurance, administrative costs, etc. The total overhead (as shown on the Profit & Loss Statement) can be broken down into production overhead and general overhead. The production portion is determined by the number of factories and the number of workers hired or laid-off in a given period. General overhead is not influenced by any other factors and is simply the cost of remaining in business.

Prime: The interest rate bankers charge their best (lowest risk) customers. It is influenced by many things, but tends to rise in strong expansions and fall in economic contractions.

Profit: Total income (see Income).

Profit and Loss Statement: Also known as an Income Statement or Earnings Report; summarizes the revenue and expense activities of a firm for a period of time. The profit and loss statement records the difference between sales receipts

and the expenses incurred in producing and selling those products. This difference, the bottom line of the statement, is either a net income or a net loss.

PPI: Abbreviation for Purchasing Power Index. Developed for this game, the PPI tracks the relative change in consumers' purchasing power resulting from changes in the GNP, after inflation's effect is removed. The value of PPI is always 100 at the start of a game.

Rate of Return: The annual earnings of the firm expressed as a percent of investment. Investing in a business is riskier than putting money in a savings account. Thus, your rate of return should exceed the savings interest rate available as well as the basic percent of economic growth.

Raw material (RM): Unfinished, unprocessed or natural commodities that are transformed through manufacturing into finished goods.

Revenue: Receipts from sales of the company's product. Mathematically it is the price multiplied by the quantity sold. Since the quantity sold varies with price (as price is raised, number sold declines) there is a different total revenue for every price. The ideal price (see Market Price) maximizes the revenue (price times quantity).

Sales: Total revenue from the selling of finished goods (see Revenue).

Scenario: The environmental context for conducting the firm's business. Scenario variables include product type, raw material pricing, economic growth, inflation outlook, etc. Strategies for winning this game will vary according to the scenario.

Simulation: An artificial model of a "real-world" situation. A good simulation allows users to experience a field of endeavor not normally available to them.

Supply: The willingness of all companies in the industry to make a given amount of product available at a given price in a given period of time. Supply works the opposite of demand. As the price rises, companies are willing to make more product available (by overtime production and expansion). As the price drops, they will offer less for sale.

Variable cost: That portion of total cost that varies directly with production or sales. Examples of this type of cost are labor and raw materials.

FURTHER READING

The Market System – Second Edition (paperback); by Robert Haveman and Kenyon Knopf; published by John Wiley and Sons.

This book offers a good introductory overview of the theories and mechanics of the economic market system.

Economics in Plain English (paperback); by Leonard Silk; published by Simon and Shuster.

A perfect introduction to economics for beginners. This book is very readable.

Finance for the Nonfinancial Manager (hardbound); by Herbert T. Spiro; published by John Wiley and Sons.

This book covers all aspects of business management with chapters such as: Economic Concepts, Accounting Conventions, Cash Management, etc. This book can broaden anyone's understanding of the elements of business management.



STARTING COSTS*

Raw Material (RM):

Purchase price/unit	50
Warehouse cost/quarter (capacity 10)	40
Storage cost/unit/quarter	1

Finished Goods (FG):

Warehouse cost/quarter (capacity 10)	80
Storage cost/unit/quarter	2

Overhead:

General overhead/quarter	1000
Production overhead/factory/quarter	300
Overhead cost of hiring 1 worker	1
Overhead cost of laying-off 1 worker5

Factories:

Purchase price	16,000
Depreciation/factory/quarter	200

Production:

Labor rate up to normal capacity	7.50
Labor rate for units over normal capacity	11.25
Workers needed/unit produced	40
Labor hours available/worker/quarter	500

$$\text{Prod. Cost} = \frac{U \times W \times (1 - A) \times R \times 500}{1000^{**}} + \text{RM cost}$$

Where:

U = number of units produced

W = workers/unit

A = percent automated/100

R = average labor rate

**Divided by 1000 since "000" is omitted from all total costs

Average production cost/unit:

At normal capacity	200.0
At 1.5 times normal capacity	225.0
At double normal capacity	237.5

* The above costs are only accurate for the first period of the game. After that inflation, economic changes, etc. revise the vallues.

IMPORTANCE TO CONSUMERS IN SELECTING A PRODUCT

Percentages by Product Type

	Necessity	Mixed	Luxury
Price	80	60	40
Advertising	10	20	30
Product	5	10	15
History	5	10	15